



Notes from the Study Director

It's that time of year again! We're pleased to send you our latest issue of the newsletter to keep you updated on our progress. We are now in our third year of the NIOSH Fire Fighter Cancer Study. Currently, we are wrapping up the first phase of our

analyses, which looks at the patterns of causes of death and cancer diagnoses for our study group. By assessing many health outcomes compared to the U.S. population, it will help narrow the focus in our later analyses. We anticipate that our study will provide new insights into fire fighter risks. Once completed, all NIOSH research undergoes a rigorous review process prior to publication. We hope to complete the review and report our first results sometime in the spring of 2013.

The next phase of the study will examine the "exposure-response" pattern for certain health outcomes. Since we do not know the actual exposures, we will be looking for differences in disease risk across fire fighters who are grouped according to their chance of exposure. We estimate this by looking at each fire fighter's work history. This analysis will allow us to see if health risks vary among fire fighters with high versus low exposure. If you'd like to learn more about how we do the analysis, please refer to our Summer 2012 newsletter (<http://www.cdc.gov/niosh/fire/pdfs/firefighternewsletter-2012-Summer.pdf>) article, "How Will We Measure Exposure?"

We hope you enjoy this issue! Please send your questions or comments to FFstudy@cdc.gov or call us at 513-841-4203. Commonly asked questions could be addressed in an upcoming newsletter. Feel free to post our newsletter on your website or share with those who may be interested.

Thank you for your interest and your help,

Robert (Doug) Daniels, PhD
Health Scientist
Director, NIOSH Fire Fighter Cancer Study

By the Numbers

We've been busy collecting and coding information on fire fighters' exposures. We base this on their work histories (engine/truck assignments), promotion histories (e.g., fire fighter to Lieutenant, etc.), and health histories (including leaves of absence). That work has resulted in these approximate totals* for each Department:

- San Francisco - **56,000** lines of data from **5,300** eligible fire fighters
- Philadelphia - **86,600** lines of data from **9,500** eligible fire fighters
- Chicago - **141,900** lines of data from **15,200** eligible fire fighters

*Numbers are likely to change with additional data collection

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Photo Courtesy of the Philadelphia Fire Department

Spotlight: Philadelphia Fire Department (PFD)

Below is the second in our series of profiles of the three fire departments participating in the NIOSH Fire Fighter Cancer Study. Information was provided by curator, Harry Magee, of the Fireman's Hall Museum, www.firemanshall.org.



PFD personnel instrumental in the NIOSH study (l-r): Henry Costo, Deputy Commissioner, Executive Chief of Health & Safety; Ernest Hargett, Deputy Commissioner of Operations; Patricia Meehan, Assistant Human Resources Manager; Karen Hyers, Human Resources Manager; Lloyd Ayers, Fire Commissioner; and John Devlin, Deputy Commissioner of Technical Services

Famous names

According to the official history of the Philadelphia Fire Department, the founder of Pennsylvania had fire safety in mind when he laid out the city of Philadelphia. William Penn had witnessed the 1666 Fire of London and knew the urgency of building fire-resistant houses with parks used as fire breaks. Penn's is not the only famous name associated with fire safety in Philadelphia. In 1736, Benjamin Franklin and 29 other prominent citizens started the city's first volunteer fire company. Volunteer companies continued to serve the city until 1870 when the professional fire department was formed.

As the city grew, so did the PFD – in size, number of companies, and the knowledge and skills of its fire fighters. Here are a few milestones for the Department:

- 1912: First motorized hose wagon placed in service.
- 1913: Philadelphia Fire Training School opened.
- 1918: Local 22 was one of the charter members at the founding of International Association of Fire Fighters.
- 1926: Fire Rescue Squad #1 organized.
- 1927: Last fire horse mustered out of service.
- 1943: Voluntary Auxiliary Fire Service created to cope with manpower shortage due to World War II.
- 1951: Six auxiliary rescue squads formed the beginning of the Department's Emergency Medical Services.
- 1977: Hazardous materials units established.



Photo Courtesy of the Philadelphia Fire Department

Commitment to safety of citizens and fire fighters

Today, PFD takes pride in its efforts to reduce fires and fire fatalities in the city. In 2011 structural fires in the city continued a decade-long decline. PFD's commitment to install smoke alarms in homes lacking this protection resulted in a 3 percent reduction in fire deaths in 2011, compared to 2010. Within the Department, a stress on accident and injury prevention led to a 2.7 percent reduction in fire fighter injuries and a 24 percent reduction in accidents involving an apparatus in 2011.

Philadelphia Fire Commissioner Lloyd Ayers notes that the Department was quick to join the NIOSH Fire Fighter Cancer Study. "For a long time, the Philadelphia Fire Department has been looking at members who have contracted cancer, many of whom have passed away. Our first formal study came from one of our deputy Chiefs, Thomas Garrity, (now retired). Chief Garrity surveyed all of our members who had contracted cancer looking at different aspects of their job, where they worked, etc., and completed a report that he shared with members of the Department. Having the opportunity to participate in a large cohort study utilizing departments from all over the country is actually a no-brainer and good for the fire service. The Philadelphia Health Commissioner and others came together to support our participation. We look forward to the information so that we can better service our members in the future and all areas including education, equipment, behavior, safety precautions and health evaluations."

Incidence: Looking More Closely at Cancer

Many studies examine causes of death to assess cancer among workers. These "mortality" studies look at patterns of cancer deaths among workers in a study group compared to another group, such as the U.S. population. State vital records centers and the National Death Index collect the information we need to do this kind of study. However, many cancers have high survival rates, so looking at just cancer deaths may not give us an accurate picture.

Alternatively, a "morbidity" study gathers information on those who have ever been diagnosed with cancer. By also examining cancer diagnosis, we can get a better sense of cancer risk than studies based only on death certificates.

Getting the information

In the U.S., there is no national cancer registry. However, since the mid-1990s most states require healthcare providers to report cancer diagnoses to state registries. We can get cancer diagnoses information through agreements with these states.

We requested information from 11 state cancer registries: Illinois, California, Pennsylvania—the locations of the participating fire departments—and nearby states of Indiana, Michigan, New Jersey, Oregon, Washington, Arizona, and Nevada. Florida is also included because many people retire there.

Once requests are made, the review and approval processes can take several months. For our study, we expect the last of the registry data to be delivered in early 2013.

Putting it together

We will carefully combine and review the data from each registry to prevent duplication - it can be a problem when multiple registries report the same cancer. We use standardized codes to classify tumors based on cancer type (e.g., leukemia, brain, and bladder) and severity (e.g., benign or malignant). We will use these data, along with the date of diagnosis and patient information to examine cancer patterns among those in our study compared to the U.S. population. In all, we will examine a total of about 40 cancer groupings.

Recent Studies of Health Concerns among Fire Fighters

- Li J et al. (2012). Association between World Trade Center exposure and excess cancer risk. *Journal of the American Medical Association*, 308(23), 2479-2488. People enrolled in the World Trade Center Health Registry were interviewed (e.g., rescue/recovery workers and those who lived, worked, or attended school in lower Manhattan). Prostate cancer, thyroid cancer, and myeloma in 2007-2008 were increased compared to New York State residents. The authors note, however, that these findings were based on a small number of events and multiple comparisons. No significant associations were seen with intensity of World Trade Center exposures. The study cites the need for longer follow-up to better study cancers. (<http://jama.jamanetwork.com/article.aspx?articleid=1486831>)
- Zeig-Owens R, et al. (2011). Early assessment of cancer outcomes in New York City firefighters after the 9/11 attacks: an observational cohort study. *The Lancet* 378(9794), 898-905. Directed by Drs. David J. Prezant and Kerry J. Kelly, Chief Medical Officers of the Fire Department of New York, this study found male fire fighters exposed to the World Trade Center disaster were at least 19% more likely to develop cancer than their non-exposed colleagues. ([http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(11\)60989-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)60989-6/fulltext))
- In June 2012, the International Agency for Research on Cancer (IARC), part of the World Health Organization, classified diesel engine exhaust as cancer-causing in humans; specifically associated with lung cancer and bladder cancer. Read more in the IARC Monograph Volume 105: Diesel and Gasoline Engine Exhausts and Some Nitroarenes. (<http://www.iarc.fr/en/media-centre/iarcnews/2012/mono105-info.php>)

Timeline

2010: NIOSH study of U.S. fire fighters began. Partnership established with the National Cancer Institute and U.S. Fire Administration. Fire fighters from Chicago, Philadelphia, and San Francisco identified for study.

2011: Study roster and collection of exposure and work history information completed.

2012: Causes of death and cancer diagnoses were identified among fire fighters in the study.

2013: Study analyses will be completed. Health risk among fire fighters will be determined.

2014: Results will be communicated to fire fighters, stakeholders, and the public.

Frequently Asked Questions about the Fire Fighter Cancer Study

If you have a question, please email it to FFstudy@cdc.gov or call the NIOSH Industrywide Studies Branch, 513-841-4203.

Q. How will I hear about the study results?

A. Although our studies are not yet done, you may already be wondering how and when you will be told about our results. We plan to discuss the most important results in our newsletter. There are several pieces to our study, so we may discuss various parts as they are completed. This means we may discuss results in several upcoming newsletters. If we discover any concerning health risks, we will mail a letter to those in the study that discusses the results in more detail once all the analyses are complete.

If you have any questions about this process, please email us at FFstudy@cdc.gov.

Please look for the next issue of the newsletter, Summer 2013. To find out more about NIOSH efforts to promote safety for fire fighters, visit www.cdc.gov/niosh/fire.